



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/538,900

06/14/2005

Scott Thomas Milner

2003B133A

6056

23455 7590 03/09/2007  
EXXONMOBIL CHEMICAL COMPANY  
5200 BAYWAY DRIVE  
P.O. BOX 2149  
BAYTOWN, TX 77522-2149

EXAMINER

RABAGO, ROBERTO

ART UNIT

PAPER NUMBER

1713

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

03/09/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/538,900

Applicant(s)

MILNER ET AL.

Examiner

Roberto Rábago

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2006.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7, 9-51, 53 and 59 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-7, 9-51, 53 and 59 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. Claims 1-7, 9-51, 53 and 59 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claims 1, 53 and 59 (and claims 2-7 and 9-51 by dependency), the specification provides no support for a polymerization pressure of 0 kPa.

2. Claim 59 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The preamble of claim 59 provides recites a process to polymerize one or more monomers; however, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A method claim is indefinite where fails to recite any active, positive steps delimiting how the proposed method is actually practiced.

### ***Claim Rejections - 35 USC § 103***

Art Unit: 1713

3. Claims 1-4, 6, 11, 26, 27, 33, 35-43, 49, 50, 53 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Halasa (US 4,248,988).

The reference discloses in Example XIV(d), by reagent substitution into Example III, a method of polymerizing butadiene in the presence of a nickel complex, triisobutyl aluminum, toluene and 2,3-difluorobutane, with molecular weights between 10,000 and 100,000 (see also col. 2, lines 18-20). Missing is the use of a polymerization temperature of less than 0°C. However, one of ordinary skill in the art would be motivated to use the claimed temperatures because the reference has suggested such use at col. 5, lines 38-39. Regarding claims 26 and 27, one of ordinary skill in the art would be motivated to select the specified compounds because they have been recommended in the reference (col. 4, line 67 through col. 5, line 26).

Applicant's arguments filed 11/30/2006 have been fully considered but they are not persuasive. Argument directed to the presence of Ni is irrelevant because the claims use the transitional phrase "comprising," and are therefore ~~are~~ open-ended. Argument asserting that the reference quantities are below 5 volume% are incorrect. The example states that "an equivalent amount" of difluorobutane has been substituted for carbon tetrachloride in the method of Example III. Therefore, the example specifies 296 g of a mixture of butadiene (44 g, about 50 ml), difluorobutane (300 mmol, about 30 ml) and small amounts of Ni complex and TIBAl, in the balance of toluene (about 220 g, about 250 ml toluene). Accordingly, the volume% of difluorobutane in the total amount of diluent is about 10%. Applicants' argument asserting that triisobutyl aluminum is not

Art Unit: 1713

a Lewis acid is not accepted. Triisobutyl aluminum is a Lewis acid by virtue of its electronic structure.

4. Claims 1-7, 9-17, 26, 27, 33-51, 53 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clough et al. (US 5,780,565) for the reasons set forth in item 8 of the Office action mailed 6/30/2006.

Applicant's arguments filed 11/30/2006 have been fully considered but they are not persuasive. Applicants argue that the reference "does not disclose applicants' specific combination ...". This is true, and it is for this reason that the rejection was not made under 35 USC 102. In this case, selections must be made from clearly defined and recommended process elements as suggested in the reference. Applicants' statement that the reference does not specifically name the claimed Lewis acids is incorrect. A broad array of Lewis acids is recommended and named at col. 8, lines 17-21. The reference furthermore recommends use of Ziegler-Natta catalysts (col. 8, line 48-50), essentially all of which require one or more Lewis acid component from groups 4, 5 and 13. The reference recommends virtually the entire claimed scope of pressure up to 14,000 kPa and a temperature including -78°C to 0°C, both of which represent substantial portions of preferred and disclosed ranges. Accordingly, one of ordinary skill in the art would be motivated to use a reasonable scope of conditions which have been specifically recommended in the reference disclosure, including those claimed. Regarding applicants' allegation of unexpected improvements in fouling, results are shown only for hydrocarbon copolymers of isobutylene, which are not disclosed in the

Art Unit: 1713

reference. Accordingly, there is no evidence of unexpected results which reasonably correspond to any of the recommended polymers of Clough. In addition, given the unlimited nature of the polymer produced in applicants' claims (the polymer may be made from any material described only as "monomer"), the scant few comparative examples described in the specification are not commensurate in scope with the exceedingly broad scope of the claims.

5. Claims 1-5, 9, 10, 14-18, 26, 27, 35, 37, 49, 50, 53 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Falchi et al. (US 5,728,783) for the reasons set forth in item 9 of the Office action mailed 6/30/2006.

Applicant's arguments filed 11/30/2006 have been fully considered but they are not persuasive. Applicants' allegation of unexpected improvements in fouling is not persuasive because results are shown only for hydrocarbon copolymers of isobutylene, which are not disclosed in the reference. Accordingly, there is no evidence of unexpected results which reasonably correspond to any of the recommended polymers of Falchi. In addition, given the unlimited nature of the polymer produced in applicants' claims (the polymer may be made from any material described only as "monomer"), the scant few comparative examples described in the specification are not commensurate in scope with the exceedingly broad scope of the claims.

Art Unit: 1713

6. Claims 1-7, 9, 10, 12, 13, 20, 21, 26, 27, 33, 35-41, 47, 51, 53 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Calfee et al. (US 2,534,698).

The reference discloses polymerization of olefins in the presence of aluminum chloride in ethyl or methyl chloride and an HFC solvent (col. 1, lines 1-8; col. 2, lines 17-22 and 35-37; col. 5, lines 1-32). The reference does not appear to have reported the polymerization pressure; however, one of ordinary skill in the art would be motivated to select a pressure of approximately atmospheric because the working examples appear to have been done under atmospheric pressure.

#### ***Double Patenting***

7. Claims 1-7, 9-51, 53 and 59 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-60 of copending Application No. 10/539,013, and claims 1-69 of copending Application No. 10/538,984, and claims 1-57 of copending Application No. 10/539,015 for the reasons set forth in item 11 of the Office action mailed 6/30/2006.

Applicants have made no traversal of these rejections.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

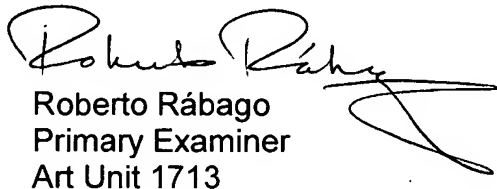
Art Unit: 1713

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberto Rábago whose telephone number is (571) 272-1109. The examiner can normally be reached on Monday - Friday from 8:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Roberto Rábago  
Primary Examiner  
Art Unit 1713

RR  
February 22, 2007